E-learning Technologies in Lifelong Learning: Opportunities and Challenges

Małgorzata Charytanowicz

Institute of Computer Science, Lublin University of Technology
Systems Research Institute, Polish Academy of Sciences
Poland

Seville, 11-13 November 2019
Introduction

Motivation

The rapid development of information and communication technologies has become a real challenge for higher education.

The main factors that affect current learning and teaching are:

- the development of the Internet, mobile devices, and web applications,
- accessibility of flexible forms of education as full-time or part-time studies:
  - students can decide when and how much time they devote to learning through Internet classes,
  - there is a need to relocate during studies,
  - the cost of online studies is lower than traditional studies.
The rapid and widespread development of new technologies in our daily life has brought more flexible forms of acquiring knowledge and has increased the number of universities and institutions which are developing and offering online courses and programs.

The use of ICT has influence on the availability, usability, and cost of learning and teaching. The communication and networking possibilities of the web, as well as virtual mobility allow the provision of international learning experiences to teachers and students, without the need for physical mobility.

The offer of Massive Open Online Courses (MOOCs) has revolutionized the approach to learning and encouraged adults to lifelong education.
Regulations of the Minister of Science and Higher Education

Regulations in the area of law on the functioning of the universities in Poland were related to the conditions that must be met to allow e-learning with students:

- The proportion of e-learning in the total time in university classes in the plan of bachelor or master's degree studies cannot exceed 60% (Journal of Acts of 2018, item 1861).
- It is possible to carry out activities of distance learning methods in all fields of study and types of studies, taking into account their specific characteristics (Journal of Acts of 2018, item 1861).
- The number of class hours conducted using distance learning methods and techniques is defined by the institution providing lifelong learning using these methods and techniques (Journal of Acts of 2012, item 1152).
Postgraduate Studies

- One fourth of all people with higher education in Poland have taken part in postgraduate studies. The average age of a postgraduate student is 36 years.

- Postgraduate studies result a salary increase of at least 20%, and in some cases, up to half more.

- In last few decades, the number of people continuing postgraduate education has been growing rapidly. At the beginning of the nineties there were about 56 thousand postgraduate students in Poland, while fifteen years later, this number has exceeded 158 thousand.\(^1\)

---

\(^1\) Sedlak and Sedlak – evidence based HR, https://sedlak.pl/

In 2002, only 11% of Polish households had Internet access, to 2018, this percentage increased up to 84%.

Table 1. Share of households with Internet access in Poland [in %].

<table>
<thead>
<tr>
<th>Year</th>
<th>Share of households</th>
<th>Year</th>
<th>Share of households</th>
</tr>
</thead>
<tbody>
<tr>
<td>2002</td>
<td>11</td>
<td>2011</td>
<td>67</td>
</tr>
<tr>
<td>2003</td>
<td>14</td>
<td>2012</td>
<td>70</td>
</tr>
<tr>
<td>2004</td>
<td>26</td>
<td>2013</td>
<td>72</td>
</tr>
<tr>
<td>2005</td>
<td>30</td>
<td>2014</td>
<td>75</td>
</tr>
<tr>
<td>2006</td>
<td>36</td>
<td>2015</td>
<td>76</td>
</tr>
<tr>
<td>2007</td>
<td>41</td>
<td>2016</td>
<td>80</td>
</tr>
<tr>
<td>2008</td>
<td>48</td>
<td>2017</td>
<td>82</td>
</tr>
<tr>
<td>2009</td>
<td>59</td>
<td>2018</td>
<td>84</td>
</tr>
<tr>
<td>2010</td>
<td>63</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Figure 1 shows the share of people aged 16-74 using Internet in their life in the last years. In the division by place and purpose of private use, one person may be indicated more than once if the Internet was used in more than one place and for more than one purpose.

In 2010, the level of using Internet at home was 53.7% of total persons aged 16-74, while in 2018, this number increased up to 76.4%.³

Fig. 1. People using Internet of total persons aged 16-74 [in %].
Table 2 presents the average levels of student satisfaction according to their university profile:

- Students had, on average, satisfaction levels greater than 5 on a 10-point scale.
- They expressed great satisfaction with personal data safety and in the e-recruitment system.
- They evaluated university systems of student service and effectiveness of university e-systems as being of lower standard.
- They had the opinion that traditional methods of completing university formalities should be completely replaced by a virtual dean’s office so as to freely gain access to personal information, payments, declarations, grades, plan of studies and so forth.
- The study showed a strong correlation between the aforementioned elements and the university image.
Table 2. Average level of student satisfaction on a 10-points scale.

<table>
<thead>
<tr>
<th>university profile</th>
<th>students’ personal data safety</th>
<th>satisfaction of e-system*</th>
<th>satisfaction of e-recruitment system</th>
<th>effectiveness and utilization of e-system</th>
<th>influence on university image</th>
</tr>
</thead>
<tbody>
<tr>
<td>artistic</td>
<td>7.54</td>
<td>4.77</td>
<td>6.42</td>
<td>3.62</td>
<td>5.41</td>
</tr>
<tr>
<td>economic</td>
<td>7.52</td>
<td>6.38</td>
<td>7.24</td>
<td>5.75</td>
<td>6.66</td>
</tr>
<tr>
<td>humanistic</td>
<td>7.36</td>
<td>5.98</td>
<td>7.54</td>
<td>5.35</td>
<td>6.46</td>
</tr>
<tr>
<td>medical</td>
<td>7.29</td>
<td>5.52</td>
<td>6.60</td>
<td>4.26</td>
<td>6.00</td>
</tr>
<tr>
<td>life sciences</td>
<td>7.14</td>
<td>5.48</td>
<td>7.25</td>
<td>4.38</td>
<td>6.00</td>
</tr>
<tr>
<td>technical</td>
<td>7.39</td>
<td>6.64</td>
<td>7.72</td>
<td>5.40</td>
<td>6.91</td>
</tr>
<tr>
<td>physical culture &amp; sport</td>
<td>7.03</td>
<td>5.55</td>
<td>7.06</td>
<td>4.00</td>
<td>6.29</td>
</tr>
<tr>
<td>others</td>
<td>7.02</td>
<td>6.25</td>
<td>6.35</td>
<td>4.79</td>
<td>6.71</td>
</tr>
</tbody>
</table>

*university systems of student service

Source: https://issuu.com/piarpl/docs/badanie_e-system_2018_finall
Figure 2 presents the opinions of students, lecturers and directors of postgraduate studies on distance learning techniques by percentage of choice. The respondents could choose a maximum of three of specified characteristics. 4

- distance learning techniques allow learning at a place and time convenient for the student, the professional usefulness of the studies is high or very high,

- the use of new ICT is insufficient, both in the administration of postgraduate studies, as well as for enabling improved and personalized communication between students and lecturers.

---

Respondents’ Opinions

- have a negligible impact on teaching and learning
- prolong the teaching process
- discourage to deepen the knowledge
- motivate to learn
- allow to learn at a place and time convenient for the student
- allow better contact with the lecturer
- facilitate access to teaching materials
- significantly speed up the teaching process

Fig. 2. Respondents’ opinions on distance learning techniques.
Postgraduate Studies in Geographical Information Systems

- Postgraduate studies in Geographical Information Systems UNIGIS are offered by the Jagiellonian University (https://unigis.uj.edu.pl/).
- The program is organised as a series of consecutive core modules, materials are made available through the e-learning platform Moodle.
- The study program conforms to world standards (GIS and T Body of Knowledge). UNIGIS studies last one year.
- The program is based on a modular structure consisting of four core modules (8 ECTS per module), optional modules (5 or more ECTS), and five stationary workshops (8 ECTS). Summarizing 45 ECTS credits is required to complete the studies.
- Average weekly workload is 12-15 hours, students may use selected courses at the ESRI Academy.
Modules Overview

1. Introduction to Geoinformatics – terminology and functional characteristics of geographic information systems.
2. Spatial Data Modelling and Database – a profound overview of common data structures and data models in GIS.
3. Spatial Data Acquisition – methods and technologies of obtaining and processing spatial data.
4. Analysis and Visualization of Spatial Data – spatial analysis methods used to evaluate, interpret and understand geographical information.
5. Optional Modules – advance and/or complement skills and knowledge acquired on UNIGIS core modules for specialised topics.
A UNIGIS graduate receives a certificate of completion of postgraduate studies at the Jagiellonian University and an UNIGIS International Association diploma.

UNIGIS alumni can benefit from the lifelong learning possibilities that the ClubUNIGIS network offers and have the exclusive, life-long right to sign up for optional modules.
Postgraduate studies in Web and Mobile Applications are offered by the WSB Universities in on-line formula (https://www.wsb.pl/).

The study is based on interactive and multimedia teaching materials available on a special platform through which students complete exercises and communicate with the group and with lecturers.

The studies last two semesters. The program has a modular structure consisting of ten modules and a project seminar.

During the study, students should work at least six hours. Completion of the modules requires undertaking the assigned exercises, preparing projects and speeches, as well as passing final tests. At the final stage of the studies, students have to complete a group project.
Modules Overview

1. Internet Services and Web Infrastructure
2. Internet Applications
3. Database Management, SQL Data Services
4. Web Design with HTML, XHTML and CSS
5. Web Applications Development in PHP, JavaScript using AJAX and Other Technologies
6. Software Engineering
7. Fundamentals and Development of Mobile Applications
8. Search Engine Optimization Website Design
9. Webdesign
10. Internet System Security
11. Postgraduate Seminar – collaboration on a group project.
Postgraduate Studies in Web and Mobile Applications

- The students will meet up with 58 hours of theoretical classes and 128 hours of practical classes (186 hours).
- 30 ECTS credits are required to successfully complete the postgraduate studies in Internet and Mobile Applications.
- WSB Universities are recognized in Poland as well as in all other EU member states. Their degrees are awarded under the laws of the European Union and are in compliance with relevant regulations of Poland’s Ministry of Higher Education and Science.
E-learning’s incontestable advantage is greater freedom in choice of time and way of learning, but it increases the importance of proper planning of own time and of controlling the learning process.

The student must to be familiar with the methods and techniques of searching for scientific information and using Internet sources. Internet sources are extensive and evaluation of the quality of published practically does not exist.
Communication through Internet requires writing skills and own time schedules. Sometimes cooperation extends for long periods and it is difficult to hold on long-term motivation. Directly organized regular meetings speed up the task implementation.

E-learning group members are distant from each other and reliable methods of student progress evaluation are necessary. It is more difficult to assess their opinions and evaluate the results than in traditional teaching where many possibilities of comparing and observing student progress exists.
E-learning requires more responsibility from students than traditional education, as well as holding a positive attitude and strong motivation to achieve the goal, competence and certainty in the use of ICT, skills for effective communication and the ability to learn and cooperate with other students.

The educational offers are well prepared, visually attractive and technically reliable. The studies motivated work and allow an effective familiarization with the study material in an individual mode. The more common online forms of education are ideal for people who have to expand their knowledge in Computer Science or other fields related with information technologies.
Thank you for your attention!
e-mail: m.charytanowicz@pollub.pl